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PSEG
Nuclear LLC

APR 0 2 2014

10CFR50.73

LR-N14-095

United States Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-001

Hope Creek Generating Station Unit 1
Renewed Facility Operating License No. NPF-57
Docket No. 50-354

Subject: Licensee Event Report 2013-008-01

Reference: PSEG Letter LR-N14-008 dated January 28, 2014
Licensee Event Report 2013-008-00

In accordance with the requirements of 10 CFR 50.73(a)(2)(iv)(A), PSEG Nuclear LLC is submitting the enclosed Licensee Event Report (LER) Number 2013-008-01, "Automatic Actuation of the Reactor Protection System due to a Main Turbine Trip." The Reference LER stated that Hope Creek Generating Station would supply a supplement to the LER with the results of an evaluation to determine the cause of the Moisture Separator dump valve failure. The results of the causal evaluation are being communicated in the LER supplement attached to this letter.

If you have any questions or require additional information, please contact Mr. Philip Duca at (856) 339-1640.

There are no regulatory commitments contained in this letter.

Sincerely,

Eric S. Carr
Plant Manager
Hope Creek Generating Station

Attachment: Licensee Event Report 2013-008-01

cc: W. Dean, Regional Administrator – Region I, NRC
J. Hughey, Project Manager - US NRC
NRC Senior Resident Inspector – Hope Creek (X24)
P. Mulligan, Manager, NJBNE
LER uploaded to ICES
Hope Creek Commitment Tracking Coordinator (H02)
L. Marabella - Corporate Commitment Tracking Coordinator (N21)

NRC FORM 366 (01-2014)

U.S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT (LER)

(See Page 2 for required number of digits/characters for each block)

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 01/31/2017

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4. TITLE

Automatic Actuation of the Reactor Protection System Due to a Main Turbine Trip

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
									N/A	05000
12	01	2013	2013	- 008	- 01	04	02	2014	FACILITY NAME N/A	DOCKET NUMBER 05000

9. OPERATING MODE	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: *(Check all that apply)*			
1	☐ 20.2201(b)	☐ 20.2203(a)(3)(i)	☐ 50.73(a)(2)(i)(C)	☐ 50.73(a)(2)(vii)
	☐ 20.2201(d)	☐ 20.2203(a)(3)(ii)	☐ 50.73(a)(2)(ii)(A)	☐ 50.73(a)(2)(viii)(A)
10. POWER LEVEL	☐ 20.2203(a)(1)	☐ 20.2203(a)(4)	☐ 50.73(a)(2)(ii)(B)	☐ 50.73(a)(2)(viii)(B)
	☐ 20.2203(a)(2)(i)	☐ 50.36(c)(1)(i)(A)	☐ 50.73(a)(2)(iii)	☐ 50.73(a)(2)(ix)(A)
100	☐ 20.2203(a)(2)(ii)	☐ 50.36(c)(1)(ii)(A)	☒ 50.73(a)(2)(iv)(A)	☐ 50.73(a)(2)(x)
	☐ 20.2203(a)(2)(iii)	☐ 50.36(c)(2)	☐ 50.73(a)(2)(v)(A)	☐ 73.71(a)(4)
	☐ 20.2203(a)(2)(iv)	☐ 50.46(a)(3)(ii)	☐ 50.73(a)(2)(v)(B)	☐ 73.71(a)(5)
	☐ 20.2203(a)(2)(v)	☐ 50.73(a)(2)(i)(A)	☐ 50.73(a)(2)(v)(C)	☐ OTHER
	☐ 20.2203(a)(2)(vi)	☐ 50.73(a)(2)(i)(B)	☐ 50.73(a)(2)(v)(D)	Specify in Abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME	TELEPHONE NUMER *(Include Area Code)*
Philip Duca, Senior Compliance Engineer	(856) 339-1640

13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX
X	SB	LCV	F130	Y					

14. SUPPLEMENTAL REPORT EXPECTED	15. EXPECTED SUBMISSION DATE	MONTH	DAY	YEAR
☐ YES *(If yes, complete 15. EXPECTED SUBMISSION DATE)* ☒ NO				

ABSTRACT *(Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)*

On December 1, 2013, at 06:13 EST, Hope Creek Unit 1 automatically scrammed from 100 percent rated thermal power due to a main turbine trip. The main turbine trip was due to high level in the 'A' moisture separator (MS). As a result of the scram, both reactor recirculation pumps tripped and three safety relief valves opened. The plant was stabilized in hot shutdown Operational Condition 3.

The MS normal level controller failed due to a ruptured bellows causing the MS drain valves to close. The MS dump valve controller attempted to maintain MS level and cycled the dump valve as required. After multiple cycles, the dump valve failed in the closed position. This caused the MS level to increase above the main turbine trip setpoint, resulting in the main turbine trip and the subsequent automatic reactor scram.

A root cause evaluation determined the cause of the MS dump valve failure was thermal binding.

The MS drain and dump valve controllers were replaced, calibrated, and functionally tested. The root cause evaluation performed after a second scram on high MS level on December 5, 2013, determined that the MS dump valve clearances need to be modified to prevent thermal binding.

This is an event reportable under 10 CFR 50.73(a)(2)(iv)(A) as an event that resulted in actuation of the reactor protection system.

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NARRATIVE

PLANT AND SYSTEM IDENTIFICATION

General Electric – Boiling Water Reactor {BWR/4}
Main Turbine – EIIS Identifier {TA/TRB}*
Moisture Separator – EIIS Identifier {SB/MSR}*
Moisture Separator Dump Valve {SB/LCV}
Reactor Protection System – EIIS Identifier {JC}*
Reactor Recirculation Pumps – EIIS Identifier {AD/P}
Safety Relief Valves - EIIS Identifier {SB/RV}

* Energy Industry Identification System {EIIS} codes and component function identifier codes appear as {SS/CCC}

IDENTIFICATION OF EVENT

Event Date: December 1, 2013
Discovery Date: December 1, 2013

CONDITIONS PRIOR TO EVENT

Hope Creek was in Operational Condition (OPCON) 1 operating at approximately 100 percent rated thermal power. No other structures, systems or components were inoperable at the time of the event.

DESCRIPTION OF EVENT

On December 1, 2013, at 06:13 EST, Hope Creek Unit 1 automatically scrammed from 100 percent rated thermal power due to a trip of the main turbine {TA/TRB}. The main turbine trip was due to a high level in the 'A' moisture separator {SB/MSR}. The main turbine trip caused an actuation of the reactor protection system (RPS){JC} resulting in an automatic reactor scram. Both reactor recirculation pumps {AD/P} tripped per design and three safety relief valves (SRV){SB/RV} lifted. The plant was stabilized in hot shutdown (OPCON 3). All control rods inserted as required and no automatic emergency core cooling system (ECCS) or reactor core isolation cooling (RCIC) system initiations occurred.

A four-hour NRC Emergency Notification System (ENS) notification was required by 10 CFR 50.72(b)(2)(iv)(B) for an actuation of RPS when the reactor was critical. The ENS notification (#49592) was completed on December 1, 2013, at 10:02 EST. This event involved an automatic actuation of RPS; therefore, this LER is being submitted pursuant to the requirements of 10 CFR 50.73(a)(2)(iv)(A).

LICENSEE EVENT REPORT (LER)
CONTINUATION SHEET

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NARRATIVE

CAUSE OF EVENT

The MS normal level controller failed due to a ruptured bellows causing the MS drain valves to close. The MS dump valve {SB/LCV} controller attempted to maintain level by cycling the MS dump valve as required; however, after 15 cycles, the dump valve failed in the closed position. This caused MS level to increase above the high level setpoint, resulting in the main turbine trip and the subsequent automatic reactor scram.

A causal evaluation determined the failure of the MS dump valve was due to thermal binding. The valve dimensional clearances were based on analysis performed at thermal equilibrium; however, the assumption of thermal equilibrium is not valid for all thermal events when temperature rise is not uniform throughout the valve.

SAFETY CONSEQUENCES AND IMPLICATIONS

There was no safety consequence associated with this event. The high moisture level in the 'A' MS resulted in a main turbine trip and subsequent automatic reactor scram. All reactor protection systems functioned as designed. All control rods inserted. All systems responded as expected to the turbine trip. No ECCS or RCIC initiation setpoints were reached. The plant was stabilized in hot shutdown (OPCON 3).

SAFETY SYSTEM FUNCTIONAL FAILURE

A review of this event determined that a Safety System Functional Failure (SSFF) did not occur as defined in Nuclear Energy Institute (NEI) 99-02, "Regulatory Assessment Performance Indicator Guideline." This event did not prevent the ability of a system to fulfill its safety function to either shutdown the reactor, remove residual heat, control the release of radioactive material, or mitigate the consequences of an accident.

PREVIOUS EVENTS

A review of events for the past three years at Hope Creek was performed to determine if a similar event had occurred. No occurrences were identified.

CORRECTIVE ACTIONS

1. The MS normal level controller, which failed due to a ruptured bellows, was replaced.
2. The MS dump valves will be modified during the next refueling outage to prevent thermal binding.

COMMITMENTS

This LER contains no commitments.